REMARKS

Reconsideration of the present application is respectfully requested. The application, as amended, includes claims 1, 2, 4, 9-11, 20-24, 43, 45-46, 48-50, 101, 103, 104, 106, 147-151, 153, 154, 202-205, 208-213 and 215-221 pending and under consideration. Claims 6-8, 12-19, 25-31, 38-42, 44, 166, 168 and 169 are also pending in the application, and have been withdrawn as directed to non-elected species from further consideration pending final resolution of genus claims.

Applicants acknowledge and thank the Examiner for the indication in the outstanding Action that claim 204 is allowed and that claims 45, 208-211, 213, 215 and 217-220 would be allowed if rewritten in independent form, including the limitations of their base claims and any intervening claims. As an initial matter, Applicants would note that claim 215 is an independent claim, and claims 217-220 depend directly or indirectly therefrom. Because no rejection of these claims was stated in the outstanding Action, it is Applicant's understanding that these claims are in condition for allowance. In addition, Applicants submit that, in view of the following remarks, the base claims to claims 45, 208-211 and 213 are also in condition for allowance, and that the objections to claims 45, 208-211 and 213 are therefore overcome.

Claim Amendments

Claims 50, 151, 208 and 212 have been amended to correct minor typographical errors or to correct claim dependencies. Specifically, claims 50 and 151 have been amended to replace "whereing" with the word "wherein." Claims 208 and 212 have been amended to depend from claims 103 and 1, respectively. No new matter has been added by way of these amendments.

Claims 1, 48, 103, 149 and 205 have been amended to recite: "leaving the chemically selective sorbent film in place on the substrate for subsequent use to selectively absorb a first chemical species to which the film is exposed" and to recite that "at least one of the first and

second precursor molecules is selected based upon its having a chemically interactive property that is retained after the hydrosilylation reactions, and that provides to the chemically selective sorbent film a functionality whereby the film selectively absorbs the first chemical species more than a second chemical species." It is believed that the claims, as amended, are in condition for allowance as discussed further below.

New Claim 221 is newly added herein, and is believed to be in condition for allowance. In this regard, claim 221 recites subject matter that the Examiner has indicated to be allowable at page 14 of the outstanding Action with regard to the reason for allowance of claim 204.

Election Requirement

Applicants acknowledge that the Examiner has indicated in the outstanding Office Action that the previously made species election requirement is now final. Without acquiescing in the propriety of this election requirement, Applicants submit that the requirement will become moot by the allowance of generic claims reading on all of the disclosed species. Applicants therefore respectfully request that, upon the allowance of the generic claims in the present application, the withdrawn claims be reinstated and allowed.

Correction of Duplicate Claims

In the outstanding Office Action, the Examiner asserted that claims 206, 207, and 214 are substantial duplicates of claims 1, 103, and 205, respectively. The Examiner therefore objected to claims 206, 207 and 214 under 37 CFR 1.75. Claims 206, 207, and 214 have now been canceled, rendering this objection moot.

Traversal of 35 U.S.C. § 112, first paragraph rejection

Claims 205, 214, and 216 are rejected in the outstanding Action under 35 U.S.C. § 112, first paragraph, "as containing subject matter which was not described in the specification in such

a way as to reasonable convey to one skilled in the relevant art that the inventor(s), at the time the applications was filed, had possession of the claimed invention." The Examiner asserts that: "Although there is support for '*polymers* with glass-to-rubber transition temperatures below the operating temperature of the sensor,' there is no support for the *chemically selective sorbent film* having the glass-to-rubber transition temperature below the operating temperature of the chemically selective sorbent film or the chemical sensor." (Office Action, page 4). In view of the cancellation of claim 214, this rejection is now moot as it pertains to this claim. With respect to claims 205 and 216, Applicants respectfully request reconsideration of this rejection in view of the following remarks.

As noted above, the Examiner stipulates that the specification provides support for a polymer having a glass-to-rubber transition temperature below the operating temperature of the chemical sensor. Applicants submit that the term "polymer" is used in the specification to refer to the material that makes up the chemically selective sorbent film of an inventive chemical sensor. Thus, a person of ordinary skill in the art will readily understand that the disclosure of "polymers with a glass-to-rubber transition temperatures below the operating temperature of the sensor" is tantamount to a description of a "chemically selective sorbent film having a glass-to-rubber transition temperature below the operating temperature of the chemically selective sorbent film or the chemical sensor." (See Declaration, paragraph 10). A person of ordinary skill in the art will readily appreciate that a "chemically selective sorbent film" as recited in the subject claims is identified interchangeably in the specification as a polymer, and thus disclosure of the glass-to-rubber transition temperature of a "polymer" provides proper 112, paragraph one, support for the recitation of a glass-to-rubber transition temperature of a "chemically selective sorbent film."

Applicants would also draw the Examiner's attention to claim 205, which recites:

> placing on a substrate a composition containing a first precursor molecule containing at least two silicon hydride groups, a second precursor molecule containing at least two carbon-carbon multiple bonds, and a photoactivatable catalyst; and
>
> exposing at least a portion of said composition to light of a type and in an amount sufficient to cause hydrosilylation reactions to occur in the composition to provide a chemically selective sorbent film;

A person of ordinary skill in the art will readily appreciate that the hydrosilylation reactions recited in this claim (i.e., between the first and second precursor molecules) are polymerization and/or polymer cross-linking reactions. The product of the hydrosilylation reaction is referred to in the specification as a polymer, and is identified in the claim as a "chemically selective sorbent film."

Indeed, upon reading the present specification, it is apparent that a number of terms are used to identify a chemically selective sorbent film as described therein. Examples include, for example, the following:

> sorbent polymer films (page 6, lines 31-32),
> sorbent and functionalized polymers (page 7, line 27; page 8, line 20),
> photopattern film of ... polymer (page 7, lines 15-16),
> sensor coating (page 7, line 20; page 8, line 28-29),
> sorbent polymers (page 8, line 23; page 8, line 32; page 9, line 19; page 9, line 26),
> sensing polymer (page 10, line 28; page 11, line 14; page 12, lines 29-30).

The specification, after setting forth a variety of representative methods "of forming a sorbent film that will selectively absorb chemical species when it is exposed to such species," (page 4, lines 26-28), states that: "The present invention also includes the sorbent polymer films made by the methods and chemical sensors made by the methods." (page 6, lines 31-33). It is apparent to a person of ordinary skill in the art that the term "chemically selective sorbent film" is used interchangeably in the specification with the terms "sorbent polymer films" and "polymer."

In view of the totality of the present disclosure, including the excerpts identified above, a person of ordinary skill in the art will readily appreciate that the discussions relating to glass-to-rubber transition temperatures of a given polymer in the specification conveys to a person of

ordinary skill in the art information regarding the glass-to-rubber temperatures of a chemically selective sorbent film of the present invention. Applicants respectfully submit that recitation of such in the claims is proper. A person of ordinary skill in the art will readily appreciate upon consideration of the subject claims, and consideration of the present specification, particularly the portions set for the above, that the inventors were in possession of the claimed invention at the time the application was filed. Applicants therefore submit that claims 205 and 216 are fully supported by the instant specification, and Applicants respectfully request that this rejection be withdrawn.

Traversal of Art Rejections

In the outstanding Office Action, claims 1, 4, 9-11, 20-24, 43, 46, 103, 106, 147, 205-207 and 214 are rejected under 35 U.S.C. §102(b) as being anticipated by Cavezzan et al. (4,939,065). Of these claims, claims 206, 207 and 214 have been cancelled, and Applicants submit that the rejection is therefore now moot as it pertains to these claims.

Of the remaining rejected claims, each of independent claims 1, 103 and 205 has been amended to recite: "leaving the chemically selective sorbent film in place on the substrate for subsequent use to selectively absorb a first chemical species to which the film is exposed" and to recite that "at least one of the first and second precursor molecules is selected based upon its having a chemically interactive property that is retained after the hydrosilylation reactions, and that provides to the chemically selective sorbent film a functionality whereby the film selectively absorbs the first chemical species more than a second chemical species." Applicants submit that these claims, as amended, are not anticipated by Cavezzan et al.

Cavezzan discloses a fabrication process for making "microelectronic" devices; the processes including the placement of a negative resist layer over a device being processed. A person of ordinary skill in the art will recognize that negative resist processing involves the placement of a

rugged, inert resist barrier over a device so that the underlying layers can be etched away, typically by contacting the underlying layers (and the resist barrier) with chemicals or other processing conditions. After etching, the resist barrier is removed prior to further processing steps. It is thus apparent to a person of ordinary skill in the art that resist layers such as those described in Cavezzan do not become functional components of the device being fabricated, but rather serve a transient purpose as a barrier during fabrication and are then discarded. As such, Cavezzan et al. cannot be found to anticipate these claims, as amended, at least because the claims recite "leaving the chemically selective sorbent film in place on the substrate for subsequent use to selectively absorb a first chemical species to which the film is exposed," which is not disclosed in Cavezzan et al.

In addition, each of claims 1, 103 and 205 recites that: "at least one of the first and second precursor molecules is selected based upon its having a chemically interactive property that is retained after the hydrosilylation reactions, and that provides to the chemically selective sorbent film a functionality whereby the film selectively absorbs the first chemical species more than a second chemical species." Cavezzan et al. do not disclose selection of precursor molecules based upon any chemically interactive properties that provide selective sorbent functionality to the resulting film. Indeed, there is no indication in Cavezzan et al. that the authors placed any importance upon sorbent functionality or chemical selectivity as characteristics of the resist films described therein. As such, this reference cannot be found to anticipate a claim that recites selecting a precursor molecule based upon such functionality. Furthermore, the method described in Cavezzan et al. uses an inhibitor material as part of his photoactivated catalyst that is contrary to the desired chemical selectivity of the film. The inhibitor described therein is a highly polar material that will influence and interfere with the chemical selectivity of the final material.

Applicant therefore submits that Cavezzan et al. teaches away from the presently claimed invention, which includes the selection of precursors based upon such selectivity.

The remaining claims depend, directly or indirectly from the independent claims discussed above. In addition to other reasons, these dependent claims are believed to be in condition for allowance for at least the same reasons as the independent claims from which they depend.

In the outstanding Office Action, claims 1, 2, 4, 9-11, 20-24, 43, 46, 205, 206 and 214 are rejected under 35 U.S.C. §102(b), as being anticipated by Oxman et al. Of these claims, claims 206 and 214 have been cancelled, and Applicants submit that the rejection is therefore now moot as it pertains to these claims.

Of the remaining rejected claims, independent claims 1 and 205 have been amended to recite: "leaving the chemically selective sorbent film in place on the substrate for subsequent use to selectively absorb a first chemical species to which the film is exposed" and to recite that "at least one of the first and second precursor molecules is selected based upon its having a chemically interactive property that is retained after the hydrosilylation reactions, and that provides to the chemically selective sorbent film a functionality whereby the film selectively absorbs the first chemical species more than a second chemical species." In traversal of this rejection, Applicants submit that these claims cannot properly be found to be anticipated by Oxman et al. because each and every element of the claimed invention is not found, either expressly or inherently, in the Oxman et al. reference.

Oxman discloses a process for the "actinic radiation-activated addition reaction of a compound" and states that: "An important application of the process and compositions of the invention is as a visible light curable impression material for dental applications." The stated advantages of the compositions and process in Oxman are: (1) the reaction composition will not

react prematurely, (2) because heat is not required, the reaction can be carried out on the surface of heat-sensitive substrate without adversely affecting the substrate, (3) actinic radiation curing requires less energy than does thermal curing, (4) greater safety attributed to visible radiation than ultraviolet radiation, (5) the composition allows the cure of unusually thick sections of material, and (6) low levels of catalyst can be used.

It is believed that there is no mention made in Oxman of any chemical functionality of the cured material. Indeed, in view of the stated use of the composition described in Oxman as an impression material for dental applications, it is apparent that the composition described therein is inert under conditions in which it is intended to be used. Each of claims 1, 103 and 205 recites that: "at least one of the first and second precursor molecules is selected based upon its having a chemically interactive property that is retained after the hydrosilylation reactions, and that provides to the chemically selective sorbent film a functionality whereby the film selectively absorbs the first chemical species more than a second chemical species." Oxman et al. do not disclose selection of precursor molecules based upon any chemically interactive properties that provide selective sorbent functionality to the resulting composition. Indeed, there is no indication in Oxman et al. that the authors placed any importance upon sorbent functionality or chemical selectivity as characteristics of the resulting compositions described therein. As such, this reference cannot be found to anticipate a claim that recites selecting a precursor molecule based upon such functionality. Accordingly, the claims of the present application also distinguish Oxman.

The remaining claims depend, directly or indirectly from the independent claims discussed above. In addition to other reasons, these dependent claims are believed to be in condition for allowance for at least the same reasons as the independent claims from which they depend.

In the outstanding Office Action, claims 2 and 104 are rejected under 35 U.S.C. §103(a), as being unpatentable over Cavezzan et al. as applied to claims 1 and 103 above, and further in view of Oxman et al. Applicants submit that this rejection is overcome at least because claims 2 and 104 depend from claims 1 and 103, respectively, which are believed to be in condition for allowance for the reasons described above.

In the outstanding Office Action, claims 48-50, 101, 149-151, 153, 154, 202 and 212 are rejected under 35 U.S.C. §103(a), as being unpatentable over Cavezzan et al. in view of Oxman et al. and Sachdev et al. In traversal of this rejection, Applicants submit that the cited references, alone or in combination, do not disclose all elements of the pending claims, and there has been identified no teaching, suggestion or motivation to modify the cited references to arrive at the present invention.

Of the rejected claims, independent claims 48 and 149 have been amended to recite: "leaving the chemically selective sorbent film in place on the substrate for subsequent use to selectively absorb a first chemical species to which the film is exposed" and to recite that "at least one of the first and second precursor molecules is selected based upon its having a chemically interactive property that is retained after the hydrosilylation reactions, and that provides to the chemically selective sorbent film a functionality whereby the film selectively absorbs the first chemical species more than a second chemical species."

Applicants submit, as already discussed above, that neither Cavezzan et al. nor Oxman et al. teaches or suggests the claimed invention at least because neither reference places any importance on any chemically interactive property of precursor molecules or any chemical selectivity functionality of the cured composition. Thus there can be found no teaching in either reference of a method in which a precursor molecule is selected based upon a chemically interactive property that

is retained after hydrosilylation. Applicants further submit that the combination of Sachdev with Cavezzan and Oxman does not render the subject claims obvious under §103 because the Sachdev reference does not make up for the shortcomings in the disclosures of Cavezzan and Oxman as discussed above.

In the outstanding Office Action, claims 48-50, 101 and 212 are rejected under 35 U.S.C. §103(a), as being unpatentable over Oxman et al. in view of Murai et al. In traversal of this rejection, Applicants submit that the cited references, alone or in combination, do not disclose all elements of the pending claims, and there has been identified no teaching, suggestion or motivation to modify the cited references to arrive at the present invention.

Of the rejected claims, independent claim 48 has been amended to recite: "leaving the chemically selective sorbent film in place on the substrate for subsequent use to selectively absorb a first chemical species to which the film is exposed" and to recite that "at least one of the first and second precursor molecules is selected based upon its having a chemically interactive property that is retained after the hydrosilylation reactions, and that provides to the chemically selective sorbent film a functionality whereby the film selectively absorbs the first chemical species more than a second chemical species."

Applicants submit that Oxman et al. does not teach or suggests the claimed invention for the same reasons as stated above. In particular, this reference does not place any importance on any chemically interactive property of precursor molecules or any chemical selectivity functionality of the cured composition, and thus there can be found no teaching in this reference of a method in which a precursor molecule is selected based upon a chemically interactive property that is retained after hydrosilylation. Applicants further submit that the combination of Murai et al. with Oxman does not render the subject claim obvious under §103 because the Murai et al.

reference does not make up for the shortcomings in the disclosures of Oxman as discussed above. The Murai reference does not supply any teaching, suggestion or motivation to modify Oxman in such a way as to arrive at the present invention.

In the outstanding Office Action, claim 148 is rejected under 35 U.S.C. §103(a), as being unpatentable over Cavezzan et al. as applied to claim 103 above, and further in view of Nelson et al. In support of this rejection, it is stated in the Action that:

> Nelson teaches ... making a chemical sensor using the hydrosilylation product made from the similar reactants as Cavezzan's (i.e., methylhydrodimethylsiloxane copolymer (which has Si-H groups), a platinum crosslinking catalyst, and vinyl functional polydimethylsiloxane). Since both of the prior arts teaches very similar reactants for hydrosilylation reaction, it is the Examiner's position that it would have been obvious to one of ordinary skill in the art to make a chemical sensor using Cavezzan's UV crosslinkable organopolysiloxane composition because Nelson clearly teaches that such composition can be used in manufacturing a chemical sensor. (Action, pages 12-13)

In traversal of this rejection, Applicants submit that the Nelson et al. reference relates to optical sensors, but does not relate to chemically selective sorbent films as recited in the pending claims, as amended. In particular, the Nelson et al. reference describes polysiloxanes that are thermally cured (i.e., that do not involve the use of photoactivated catalysts) for use as a matrix material or as an overcoating for a sensing material, not as a sorbent sensing film. In addition, it appears that the Nelson et al. reference describes using hydrosilylation reactions to attach a dye to a polymer for subsequent use in a matrix material. However, it is believed that there is no disclosure or suggestion to be found in Nelson et al. of a chemically selective sorbent film as recited in the present claim. In addition, the Nelson et al. reference does not describe the use of hydrosilylation reactions to render a portion of a layer more soluble than another portion, nor does Nelson et al. mention photopatterning of any layer. Furthermore, it appears that photopatterning would not be possible or desirable in any of the processes described in the Nelson et al. reference Therefore,

because claim 148 recites a device that includes a photopatterned chemically selective sorbent film, Applicants submit that the invention of claim 148 is patentably distinct from the cited references.

Furthermore, Applicants submit that there is no explanation in the outstanding Action of how the Nelson et al. reference can be combined with the Cavezzan et al. reference as suggested by the Examiner. Although hydrosilylation reactions are mentioned in both references, that is where the similarity between the references ends. A person of ordinary skill in the art working on an optical fiber sensor as described in Nelson et al. would have no motivation to look to the Cavezzan et al. disclosure of a negative photoresist material to modify the optical fiber sensor device or to modify the manner in which a dye is linked to a copolymer. Nor would such a person find in Cavezzan et al. any suggestion or motivation to modify the optical fiber sensor of Nelson et al. in a manner that would give rise to the present invention. Similarly, a person of ordinary skill in the art working on microelectronic fabrication processes as described in Cavezzan et al. would have no motivation to look to the Nelson et al. disclosure of an optical fiber sensor to modify the photoresist development process. Nor would such a person find in Nelson et al. any suggestion or motivation to modify the fabrication process to arrive at the present invention. There is simply no suggestion to be found in either reference to combine the references as suggested by the Examiner.

In view of the above, Applicants submit that, prior to the present invention, a person of ordinary skill in the art would not have modified Cavezzan in the manner suggested by the Examiner, and the combination asserted by the Examiner therefore does not establish a *prima facie* case of obviousness of claim 148.

In the outstanding Office Action, claim 203 is rejected under 35 U.S.C. §103(a), as being unpatentable over Cavezzan et al. in view of Oxman et al. and Sachdev et al as applied to claim

149 above, and further in view of Nelson et al. In traversal of this rejection, Applicants submit that there is also no motivation to be found in the cited art to combine the teachings of Cavezzan et al., Oxman et al. and Sachdev et al. with the teachings of Nelson, nor would such a combination give rise to the presently claimed invention.

As stated above, the Nelson et al. reference relates to optical sensors, but does not relate to chemically selective sorbent films as recited in the pending claims, as amended. It is believed that there is no disclosure or suggestion to be found in Nelson et al. of a chemically selective sorbent film as recited in the present claim. In addition, the Nelson et al. reference does not describe the use of hydrosilylation reactions to render a portion of a layer more soluble than another portion, nor does Nelson et al. mention photopatterning of any layer. Furthermore, it appears that photopatterning would not be possible or desirable in any of the processes described in the Nelson et al. reference. Therefore, because claim 203 recites a device that includes a photopatterned chemically selective sorbent film, Applicants submit that the invention of claim 203 is likewise patentably distinct from the cited references.

Furthermore, Applicants submit that there is no explanation in the outstanding Action of how the Nelson et al. reference can be combined with the Cavezzan et al., Oxman et al. and Sachdev et al. references as suggested by the Examiner. A person of ordinary skill in the art working on an optical fiber sensor as described in Nelson et al. would have no motivation to look to the Cavezzan et al. disclosure, the Oxman et al. disclosure or the Sachdev et al. disclosure to modify the optical fiber sensor device or to modify the manner in which a dye is linked to a copolymer during manufacture of the optical fiber sensor device. Nor would such a person find in Cavezzan et al., Oxman et al. or Sachdev et al. any suggestion or motivation to modify the optical fiber sensor of Nelson et al. in a manner that would give rise to the present invention. Similarly, a

person of ordinary skill in the art working on microelectronic fabrication processes as described in Cavezzan et al., a dental appliance composition as disclosed in Oxman et al. or a photoresist material as disclosed in Sachdev et al. would have no motivation to look to the Nelson et al. disclosure of an optical fiber sensor to modify the photoresist development process or the dental appliance composition, respectively. Nor would such a person find in Nelson et al. any suggestion or motivation to modify the fabrication process or the dental appliance composition to arrive at the present invention. There is simply no suggestion to be found in any of these references to combine the references as suggested by the Examiner.

In view of the above, Applicants submit that, prior to the present invention, a person of ordinary skill in the art would not have modified Cavezzan et al., Oxman et al. and Sachdev et al. in the manner suggested by the Examiner, and the combination asserted by the Examiner therefore does not establish a *prima facie* case of obviousness of claim 203.

In addition to the above, Applicants submit that the dependent claims pending in this application satisfy the novelty and inventive step requirements at least for the same reasons that the claims from which they depend satisfy these requirements. In this regard, claims 2, 4, 6-31 and 38-45 depend from claim 1, and are believed to be allowable at least for the reasons claim 1 is allowable and for other reasons. Claims 49 and 50 depend from claim 48, and are believed to be allowable at least for the reasons claim 48 is allowable and for other reasons. Claims 104 and 106 depend from claim 103, and are believed to be allowable at least for the reasons claim 103 is allowable and for other reasons. Claims 150, 151, 153, 154, 166, 168, and 169 depend from claim 149, and are believed to be allowable at least for the reasons claim 149 is allowable and for other reasons. Although the above discussion is based primarily upon features recited in

independent claims, dependent claims pending in this application define additional features of various embodiments of the invention, and are patentable for additional reasons as well.

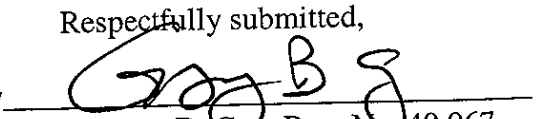
Applicant would also draw the Examiner's attention to new claim 221 presented herein. This claim is also believed to define patentable subject matter that is novel and non-obvious over the references of record. Applicants therefore respectfully request an indication that this claim is in condition for allowance.

CLOSING

In view of the above, Applicant respectfully submits that the present application, as amended and including pending claims 1, 2, 4, 6-31, 38-46, 48-50, 101, 103, 104, 106, 147-151, 153, 154, 166, 168, 169 202-205, 208-213, and 215-221, is in condition for allowance. Action to that end is respectfully requested. Applicant also submits that, upon allowance of generic claims, it is proper to also allow those claims that were previously withdrawn as being drawn to non-elected species (i.e., claims 6-8, 12-19, 25-31, 38-42, 44, 166, 168 and 169).

If there are any remaining issues that can be addressed telephonically, the Examiner is invited to contact the undersigned to discuss the same.

Respectfully submitted,

By 

Gregory B. Coy, Reg. No. 40,967
Woodard, Emhardt, Naughton, Moriarty
& McNett LLP
Bank One Center/Tower
111 Monument Circle, Suite 3700
Indianapolis, Indiana 46204-5137
(317) 634-3456
(317) 637-7561